



ElectroMagnetic Compatibility

VERIFICATION COMPLIANCE STATEMENT

For the

Applicant : FEAGLE Co., Ltd
Product : Plasma skincare device
Model : AC-01-W
Additional Model(s) : AC-01-T
Standards : EN 55014-1, EN IEC 55014-1,
EN 55014-2, EN IEC 55014-2,
EN 61000-3-2, EN IEC 61000-3-2, EN 61000-3-3

We hereby certify that the above product has been tested by us with the listed standards and found in compliance with the EMC Directive. The test data and results are issued on the test report no. TR-W2408-013

Signature

A handwritten signature in black ink, appearing to read 'Choi, Young-min', written over a horizontal line.

Choi, Young-min / Managing Director

Date: August 29, 2024

Test Laboratory: ENG Co., Ltd.

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EMC TEST REPORT

Project Number : EA2408C-022
 Test Report Number : TR-W2408-013
 Type of Equipment : Plasma skincare device
 Model Name : AC-01-W
 Additional Model Name : AC-01-T
 Applicant : FEAGLE Co., Ltd
 Address : 47, Seokgyesandan 2-gil, Sangbuk-myeon, Yangsan-si,
 Gyeongsangnam-do, Republic of Korea
 Manufacturer : FEAGLE Co., Ltd
 Address : 47, Seokgyesandan 2-gil, Sangbuk-myeon, Yangsan-si,
 Gyeongsangnam-do, Republic of Korea
 Product Standard : EN 55014-1:2017/A11:2020, EN IEC 55014-1:2021
 EN 55014-2:1997/A2:2008, EN IEC 55014-2:2021
 EN 61000-3-2:2014, EN IEC 61000-3-2:2019/A1:2021
 EN 61000-3-3:2013, EN 61000-3-3:2013/A2:2021
 Total page of Report : 43 pages
 Date of Receipt : August 07, 2024
 Date of Issue : August 29, 2024
 Test Result : PASS

This test report only contains the result of a single test of the sample supplied for the examination.
 It is not a generally valid assessment of the features of the respective products of the mass-production.

Prepared by Chu, Woo-sik / Chief Engineer

Signature

August 29, 2024

Date

Reviewed by Choi, Young-min / Managing Director

Signature

August 29, 2024

Date

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Release Control Record

Issue Report No.	Issued Date	Details/Revisions
TR-W2408-013	August 29, 2024	Initial Release

1. TEST SUMMARY

1.1 Test standards and results

The sample submitted for evaluation (Hereafter refer to as the EUT) has been tested in accordance with the following standards.

EMISSION			
Applied Standards	Test Items	Results	Note
EN 55014-1:2017/A11:2020 EN IEC 55014-1:2021	Conducted Disturbances from AC mains power ports	C	-
	Discontinuous Disturbance	C	-
	Disturbance Power	N/A	Note 1
	Radiated Emission	C	-
EN 61000-3-2:2014 EN IEC 61000-3-2:2019/A1:2021	Harmonic current emission	C	-
EN 61000-3-3:2013 EN 61000-3-3:2013/A2:2021	Voltage changes, voltage fluctuations and flicker	C	-
IMMUNITY			
Applied Standards	Test Items	Results	Note
EN 55014-2:1997/A2:2008 EN IEC 55014-2:2021 Category III & IV	Electrostatic Discharges (ESD)	C	-
	Radio Frequency Electromagnetic Fields	C	-
	Fast Transients	C	-
	Surges	C	-
	Injected Currents	C	-
	Voltage Dips	C	-
Remark: C means Comply N/C means Not Comply N/A means Not Applicable <i>Note 1:</i> As per the customer's request, this item was not tested using a radiated emission test method.			

1.2 Purpose of the test

To determine whether the EUT fulfills the EMC requirements of the standards stated in section 1.1.

1.3 Additions, deviations, exclusions from standards

No additions, deviations or exclusions have been made from standard.

1.4 Test Facility

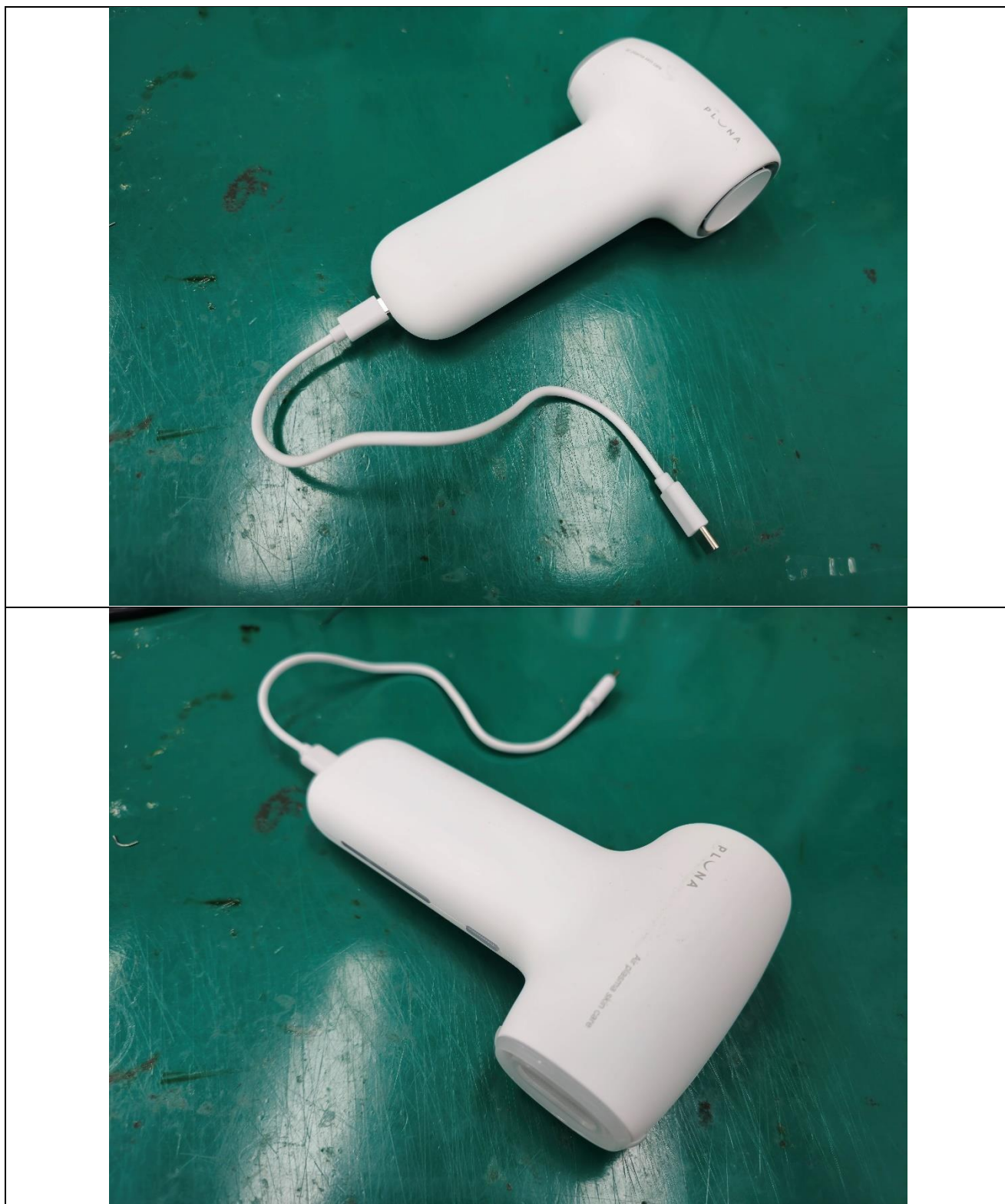
The measurement facilities are located at 135-60 Gyeongchung-daero, Gonjam-eup, Gwangju-si, Gyeonggi-do 12813, Korea. Our test facilities are accredited as a Conformity Assessment Body (CAB) by the FCC and ISED Canada, designated by the RRA (National Radio Research Agency), and accredited by KOLAS (Korea Laboratory Accreditation Scheme) in Korea and approved by TÜV Rheinland, TÜV SÜD and Korean Register of Shipping according to the requirement of ISO/IEC 17025.

Laboratory Qualification	Registration No.	Mark
FCC	KR0160	
ISED Canada	12721A	
RRA	KR0160	
TÜV Rheinland	UA 50314109-0002	
TÜV SÜD	CARAT 094465 0004 Rev.00	
Korean Agency for Technology and Standards	KT733	
Korea Register of Shipping	PCT40841-TL001	
VCCI	Member No: 4297	

Remark. This report is not related to KOLAS accreditation and relevant regulation.

2. EUT (Equipment Under Test) INFORMATION

2.1 Photo of the EUT



2.2 General Description

The FEAGLE Co., Ltd, Model AC-01-W (referred to as the EUT in this report) is a Plasma skincare device, which is a beauty device. The product specification described herein was obtained from product data sheet or user's manual.

Trade mark	P LUNA
Type of Equipment	Plasma skincare device
Maximum Clock Frequency	32 MHz
Electrical rating	3.7 Vdc, 2 000 mAh
Size	90 × 167 × 52 (mm)

2.3 Model Difference

Model Name	Model Difference
AC-01-W	Basic Model
AC-01-T	Identical to the basic model except for external color difference.
Note: The information about the additional models was listed by the manufacturer's declaration.	

3. TEST CONDITION AND OPERATION MODES

3.1 Description of associated equipment

Description	Model No.	Serial No.	Manufacturer.
Plasma skincare device (EUT)	AC-01-W	N/A	FEAGLE Co., Ltd
AC/DC Adapter	BT025-12052KCAB	N/A	Baotun Technology Co., Ltd.

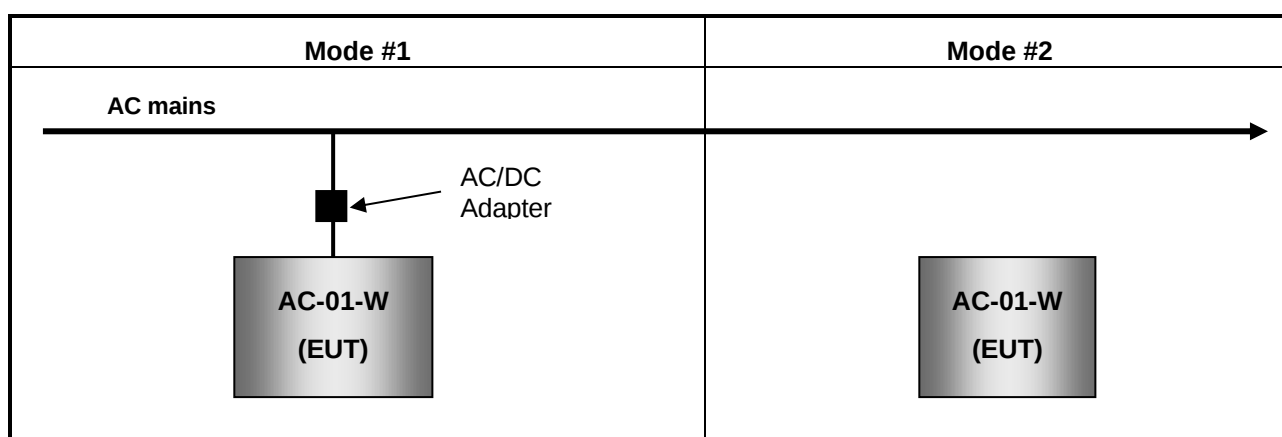
3.2 Cable Description

Description	Ports Name	Shielded (Y/N)	Ferrite Core (Y/N)	Length (m)	Connected to
Plasma skincare device (EUT)	USB-C	Y	N	0.3	AC/DC Adapter
AC/DC Adapter	AC IN	N	N	1.2	AC Mains

3.3 Mode of operation during the test

Test Mode	Description
Mode #1	The EUT was operated in charging status and input voltage was 230 Vac 50 Hz.
Mode #2	The EUT was operated in plasma emitting status by it's internal battery. Note: This test mode is a unified mode developed by the manufacturer to allow for continuous operation across all three modes: spot, line, and face.

3.4 Test Setup Drawing



4. EUT Modifications

- No EMC Relevant Modifications were performed by this test laboratory.

5. EVALUATION DURING IMMUNITY TESTS

5.1 Function Test

Verification of correct function was carried out before and after each immunity tests.

5.2 Criteria of acceptance

5.2.1 Performance criteria according to EN 55014-2

Criteria	Description
A	The apparatus shall continue to operate as intended during the test. No degradation of performance or loss of function is allowed below a performance level (or permissible loss of performance) specified by the manufacturer, when the apparatus is used as intended. If the minimum performance level or the permissible performance loss is not specified by the manufacturer, then either of these may be derived from the product description and documentation, and from what the user may reasonably expect from the apparatus if used as intended.
B	The apparatus shall continue to operate as intended after the test. No degradation of performance or loss of function is allowed below a performance level (or permissible loss of performance) specified by the manufacturer, when the apparatus is used as intended. During the test, degradation of performance is allowed, however no change of actual operating state or stored data is allowed to persist after the test. If the minimum performance level or the permissible performance loss is not specified by the manufacturer, then either of these may be derived from the product description and documentation, and from what the user may reasonably expect from the apparatus if used as intended.
C	Temporary loss of function is allowed, provided the function is self-recoverable or can be restored by the operation of the controls, or by any operation specified in the instructions for use.

5.3 EUT Specific Performance Criteria

No specific performance criteria was provided by the manufacturer.

5.4 Functions Monitored During and After Immunity Test

Test mode	Description
#1, #2	Observed whether LED status on the EUT on charging and/or operating status was changed or not.

5. MEASUREMENT UNCERTAINTY

5.1 Emission

Test Items	Frequency range	Uncertainty
Continuous Disturbance Voltage	150 kHz ~ 30 MHz	2.23 dB
Disturbance Power	30 MHz ~ 300 MHz	2.88 dB
Radiated electromagnetic field	30 MHz ~ 1 000 MHz	4.77 dB
	1 000 MHz ~ 18 000 MHz	5.02 dB
Harmonic Current	50 Hz ~ 2 kHz	0.2 %
Voltage Fluctuation and Flicker	N/A	5.0 %

The measurement uncertainties are given with at least 95 % confidence.

5.2 Immunity

Test Items	Frequency range	Uncertainty
Electrostatic Discharge	N/A	Met the specified requirements in the standard
RF Electromagnetic Field	80 MHz ~ 6 GHz	1 V/m: 0.27 V/m, 3 V/m: 0.81 V/m, 10 V/m: 2.7 V/m, 20 V/m: 5.4 V/m
Electrical Fast Transient/Burst	N/A	Met the specified requirements in the standard
Surge	N/A	
Conducted RF Field	150 kHz ~ 80 MHz	1 V: 0.39 V, 3 V: 1.17 V, 10 V: 3.90 V
Power Frequency Magnetic Field	N/A	Met the specified requirements in the standard
Voltage dips and Short Interruptions	N/A	

The measurement uncertainties are given with at least 95 % confidence.

6. EMISSION TESTS

6.1 Conducted Emissions from AC mains power ports

6.1.1 Test setup

The EUT was placed on the floor as typical applications. Power was fed to the EUT through a $50\ \Omega$ / $50\ \mu\text{H} + 5\ \Omega$ Artificial Mains Network (AMN). The ground plane was electrically bonded to the reference ground system and all power lines were filtered from ambient.

The test set-up photos are included in appendix I.

6.1.2 Sample Calculated Example

Used Software for measurement is EMC 32 supplied by Rohde & Schwarz.

At 5.31 MHz

QP Limit = 73.0 dB μ V

Correction Factor (C. Factor) of LISN, Pulse Limiter and cable loss at 5.31 MHz = 9.7 dB

Q.P Reading from the Test receiver = 50.0 dB μ V

(Calculated value for system losses by software EMC32 manufactured by Rohde & Schwarz)

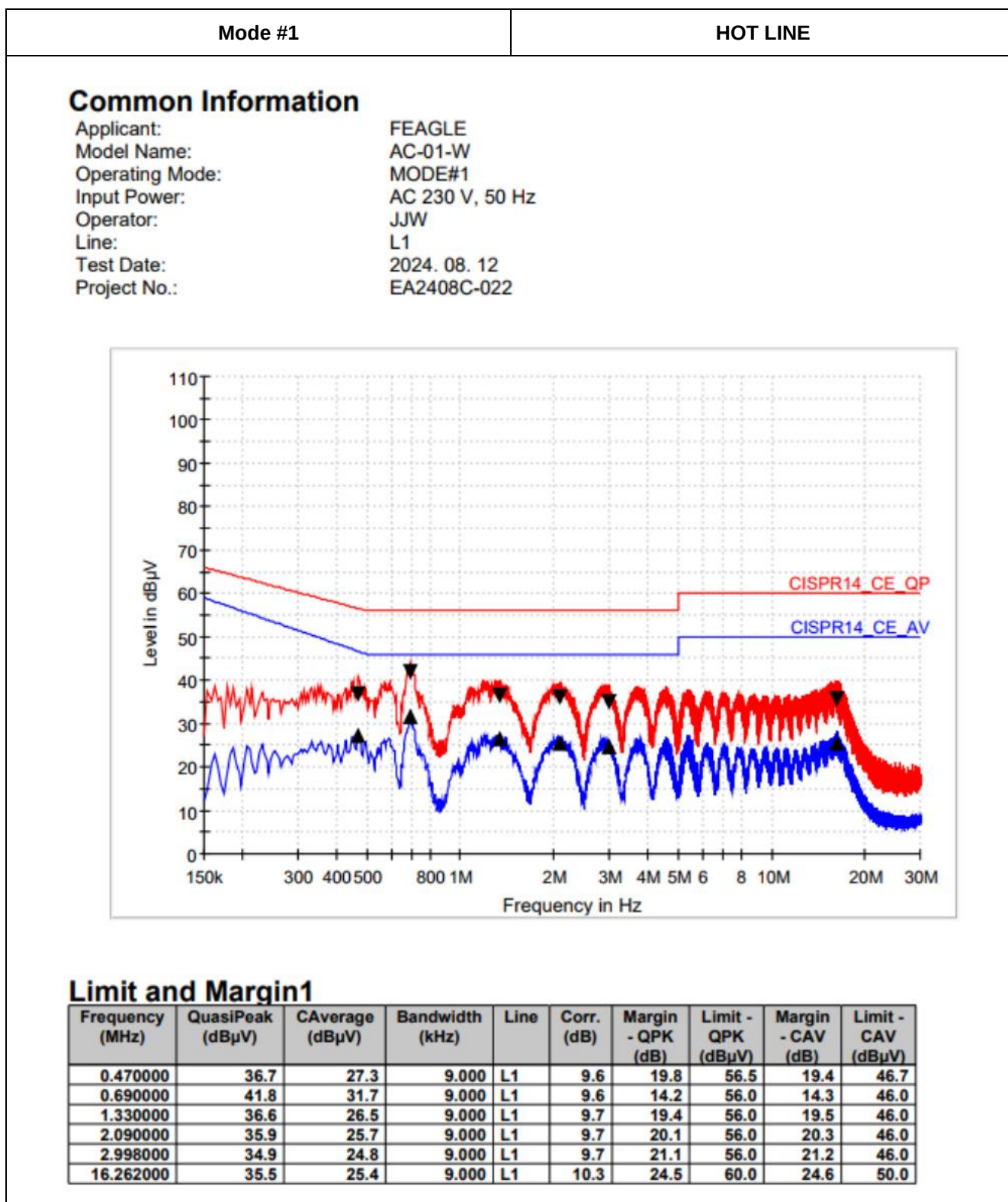
Therefore Q.P Margin = $73.0 - 50.0 = 23.0$

so the EUT has 23.0 dB margin at 5.31 MHz

6.1.3 Test Result

Date of Test	August 12, 2024	Temperature	(22.6 ~ 22.8) °C
Test Mode	Mode #1	Relative humidity	(51.4 ~ 51.6) % R.H.
Resolution bandwidth	9 kHz	Frequency range	0.15 MHz ~ 30 MHz
Test Result	Pass	Tested By	Jung, Ji-won 정지원

6.1.4 Test data

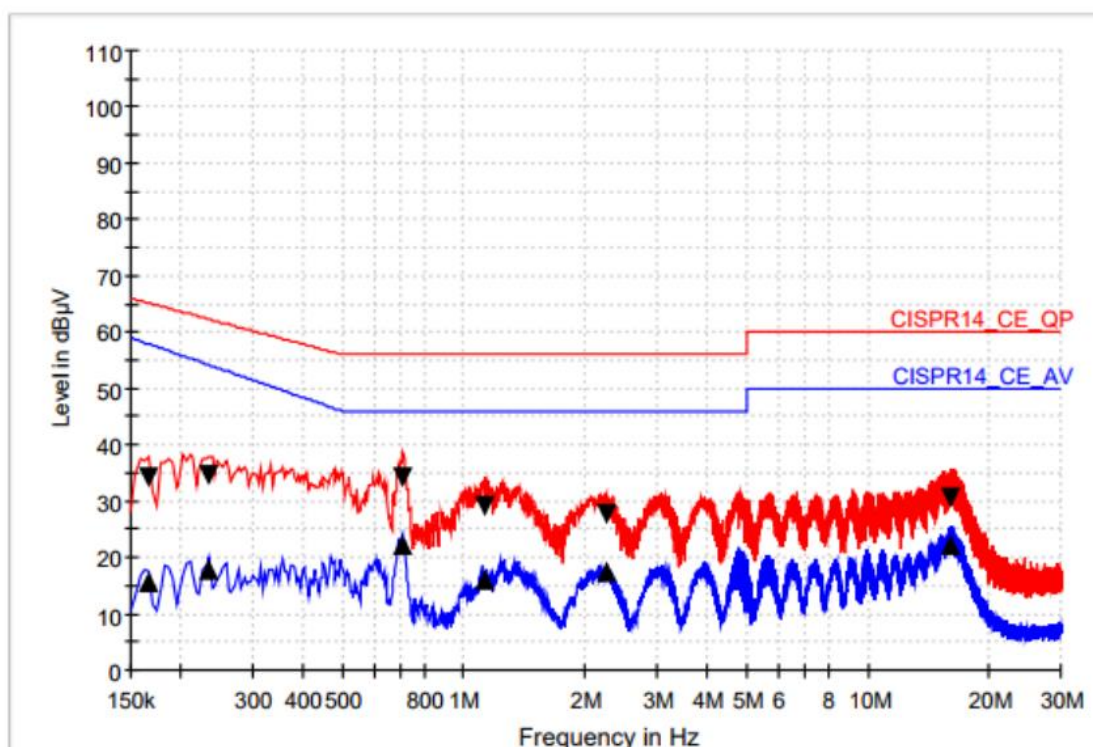


Mode #1

NEUTRAL LINE

Common Information

Applicant: FEAGLE
 Model Name: AC-01-W
 Operating Mode: MODE#1
 Input Power: AC 230 V, 50 Hz
 Operator: JJW
 Line: N
 Test Date: 2024. 08. 12
 Project No.: EA2408C-022



Limit and Margin1

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin - QPK (dB)	Limit - QPK (dBμV)	Margin - CAV (dB)	Limit - CAV (dBμV)
0.166000	34.2	15.5	9.000	N	9.6	31.0	65.2	42.4	57.9
0.234000	34.5	18.0	9.000	N	9.6	27.8	62.3	36.2	54.2
0.710000	34.2	22.0	9.000	N	9.6	21.8	56.0	24.0	46.0
1.126000	29.1	16.0	9.000	N	9.7	26.9	56.0	30.0	46.0
2.246000	27.8	17.5	9.000	N	9.7	28.2	56.0	28.5	46.0
16.110000	30.8	22.3	9.000	N	10.3	29.2	60.0	27.7	50.0

6.2 Discontinuous Disturbance Voltage

6.2.1 Test setup

The EUT was placed on the floor as typical applications. Power was fed to the EUT through a $50\ \Omega$ / $50\ \mu\text{H} + 5\ \Omega$ Artificial Mains Network (AMN). The ground plane was electrically bonded to the reference ground system and all power lines were filtered from ambient.

The test set-up photo is included in appendix II.

Used Software for measurement is CMS supplied by AFJ Instruments.

6.2.2 Test result

Date of Test	August 12, 2024	Temperature	(22.9 ~ 23.7) °C
Test Mode	Mode #1	Relative humidity	(50.9 ~ 51.7) % R.H.
Observation time (min)	120	Test Result	PASS
Tested By	Jung, Ji-won 정지원		

6.2.3 Test data



TEST REPORT

TEST PASS

12/8/2024 09:06:31

Title	EA2408C-022	Time Test	02:00:32.04
Required	FEAGLE	Executed by	JJW
Description	MODE#1		
Model	AC-01-W		

150 kHz

500 kHz

1.4 MHz

30 MHz

First Run

Short	0	0	0	0
Long	0	0	0	0
Long (10 < t ≤ 20 ms)	0	0	0	0
Tot. Clicks Corr	0	0	0	0
Events	0	0	0	0
Time(s)	0.00	0.00	0.00	0.00
Sw.Op.	0	0	0	0
5.4.3.5 events	0	0	0	0
Limit dBuV	66	56	56	60
N	0.00	0.00	0.00	0.00
	PASS	PASS	PASS	PASS

150 kHz

No Clicks

500 kHz

No Clicks

1.4 MHz

No Clicks

30 MHz

No Clicks

6.3 Radiated Emissions

6.3.1 Test setup

The radiated emissions measurements were on the 10 m for below 1 000 MHz and 3 m for above 1 GHz at semi anechoic chamber. The EUT and all local support equipment were placed on a non-conductive turntable approximately 0.8 m above the ground plane.

The frequency spectrum from 30 MHz to 6 000 MHz was scanned and emission levels maximized at each frequency recorded. The system was rotated 360°, and the antenna was varied in height between 1.0 m and 4.0 m in order to determine the maximum emission levels. This procedure was performed for both horizontal and vertical polarization of the receiving antenna.

The test set-up photos are included in appendix III.

6.3.2 Sample Calculated Example

Used Software for measurement is manufactured by TSJ and EMC 32 by Rohde & Schwarz.

At 80 MHz

Limit = 30.0 dBuV/m

Result = Receiver reading value + Antenna Factor + Cable Loss - Pre-amplifier gain = 25.0 dBuV/m

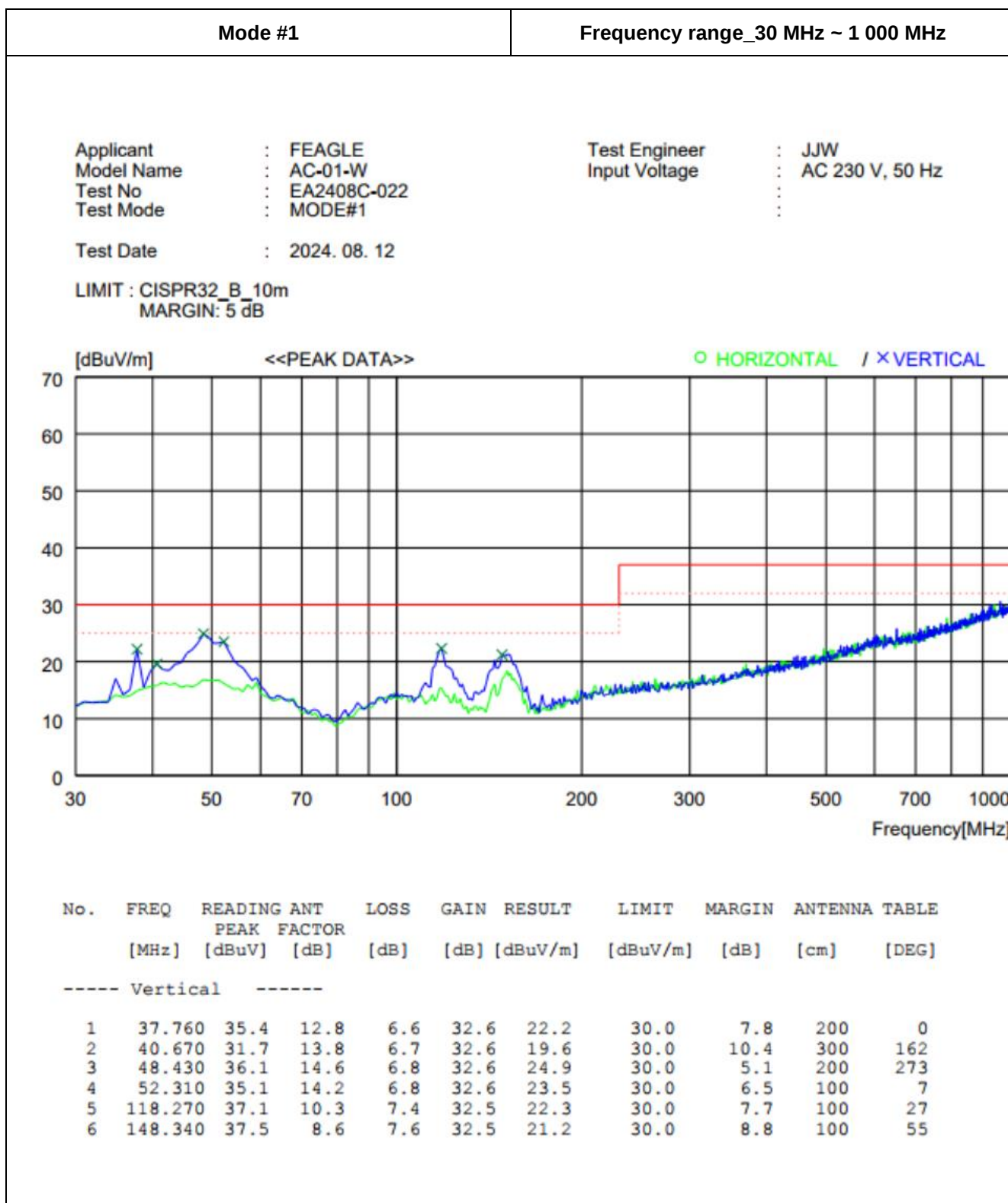
Margin = Limit - Result = 30.0 – 25.0 = 5.0

so the EUT has 5.0 dB margin at 80 MHz

6.3.3 Test result

Date of Test	August 12, 2024			
Temperature	(21.9 ~ 22.1) °C	Relative humidity	(58.8 ~ 59.1) % R.H.	
Operating Input Voltage	230 Vac, Battery	Input Frequency	50 Hz	
Frequency range	RBW	VBW	Detector Mode	Measurement distance
Below 1 000 MHz	120 kHz	300 kHz	Peak or Q.P.	10 m
Test Mode	Mode #1, Mode #2			
Test Result	Pass	Tested By	Jung, Ji-won 정지원	

6.3.4 Test data



Mode #2

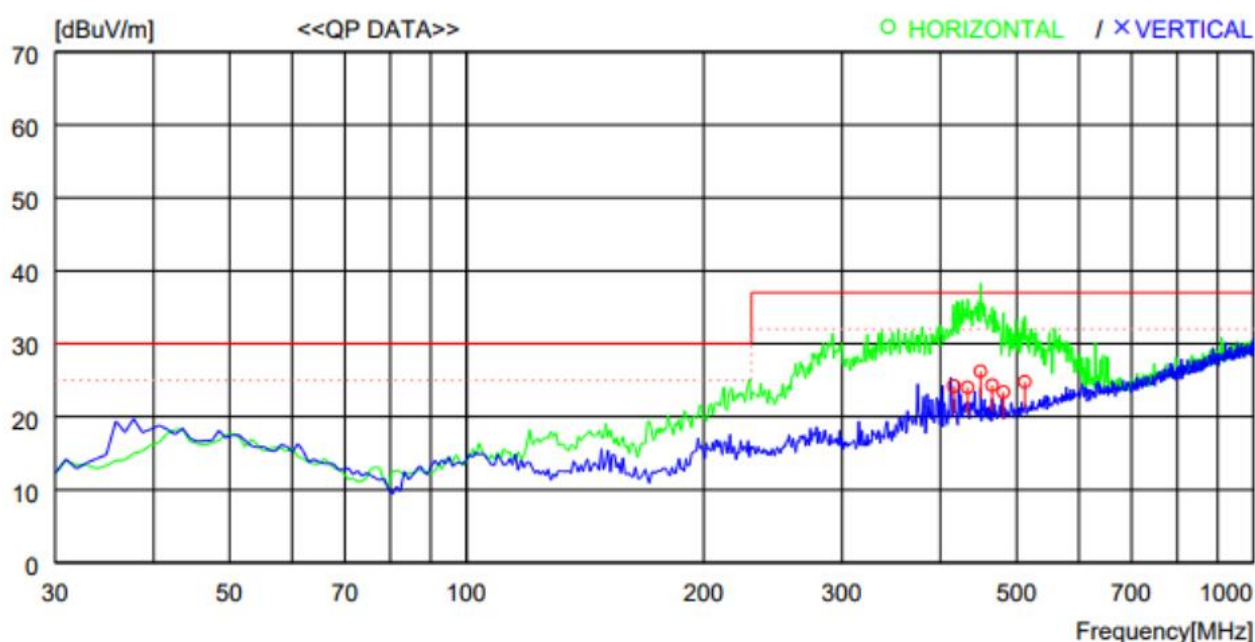
Frequency range_30 MHz ~ 1 000 MHz

Applicant : FEAGLE
Model Name : AC-01-W
Test No : EA2408C-022
Test Mode : MODE#2

Test Engineer : JJW
Input Voltage : BATTERY

Test Date : 2024. 08. 12

LIMIT : CISPR32_B_10m
MARGIN: 5 dB



No.	FREQ	READING	ANT	LOSS	GAIN	RESULT	LIMIT	MARGIN	ANTENNA	TABLE
		QP	FACTOR							
	[MHz]	[dBuV]	[dB]	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dB]	[cm]	[DEG]
----- Horizontal -----										
1	416.061	31.5	16.1	9.1	32.5	24.2	37.0	12.8	200	0
2	433.521	31.0	16.3	9.2	32.5	24.0	37.0	13.0	200	0
3	450.011	32.8	16.6	9.3	32.5	26.2	37.0	10.8	200	120
4	465.531	30.7	16.8	9.3	32.5	24.3	37.0	12.7	200	0
5	481.051	29.4	17.1	9.4	32.5	23.4	37.0	13.6	100	359
6	512.091	30.3	17.6	9.5	32.6	24.8	37.0	12.2	200	0

6.4 Harmonic Current Emissions

6.4.1 Test setup

Harmonics of the fundamental current were measured up to 2 kHz using a universal power analyzer.

The measurements were carried out under steady conditions and using average.

Before making measurements, it is necessary for the EUT to decide which class the EUT fulfills into; A, B, C or D.

The test set-up photo is included in appendix IV.

6.4.2 Test result

Date of Test	August 12, 2024	Temperature	(24.4 ~ 24.6) °C
Test Mode	Mode #1	Relative humidity	(50.6 ~ 50.9) % R.H.
Test Result	Pass	Tested By	Jung, Ji-won 정지원

6.4.3 Test data

- Classification of EUT: Class A

- The measured power is less than 75 W, so the EUT met the limit acc. to the standard.

Check Harmonics 2..40	
<i>First detected harmonic order > 150 %</i>	
Line 1:	None
<i>Harmonics orders > 150 %</i>	
Line 1:	None
<i>Harmonics orders with average > 100 %</i>	
Line 1:	None
Measured values	
<i>Fundamental Current</i>	
Line 1:	0.01 A
<i>Active input Power</i>	
Line 1:	2.161 W *
<i>Circuit power factor</i>	
Line 1:	0.285 *
* Absolute value.	

-. Voltage Source Verification

Harmonic voltage results				
Hn	Ueff [V]	Ueff [%]	Limit [%]	Result
1	229.867	99.942		
2	0.116	0.051	0.200	PASS
3	0.140	0.061	0.900	PASS
4	0.012	0.005	0.200	PASS
5	0.033	0.014	0.400	PASS
6	0.018	0.008	0.200	PASS
7	0.057	0.025	0.300	PASS
8	0.007	0.003	0.200	PASS
9	0.120	0.052	0.200	PASS
10	0.016	0.007	0.200	PASS
11	0.035	0.015	0.100	PASS
12	0.012	0.005	0.100	PASS
13	0.053	0.023	0.100	PASS
14	0.008	0.003	0.100	PASS
15	0.124	0.054	0.100	PASS
16	0.005	0.002	0.100	PASS
17	0.018	0.008	0.100	PASS
18	0.014	0.006	0.100	PASS
19	0.072	0.031	0.100	PASS
20	0.007	0.003	0.100	PASS
21	0.093	0.040	0.100	PASS
22	0.005	0.002	0.100	PASS
23	0.035	0.015	0.100	PASS
24	0.007	0.003	0.100	PASS
25	0.082	0.036	0.100	PASS
26	0.007	0.003	0.100	PASS
27	0.050	0.022	0.100	PASS
28	0.006	0.003	0.100	PASS
29	0.044	0.019	0.100	PASS
30	0.005	0.002	0.100	PASS
31	0.080	0.035	0.100	PASS
32	0.006	0.003	0.100	PASS
33	0.031	0.014	0.100	PASS
34	0.006	0.003	0.100	PASS
35	0.048	0.021	0.100	PASS
36	0.007	0.003	0.100	PASS
37	0.060	0.026	0.100	PASS
38	0.006	0.003	0.100	PASS
39	0.012	0.005	0.100	PASS
40	0.007	0.003	0.100	PASS

6.5 Voltage Changes, Voltage Fluctuations and Flicker

6.5.1 Test setup

The voltage changes at the supply terminals were measured across the complex reference impedance $Z = (0.4 + j0.25) \Omega$.

The short-term flicker values are measured during a time interval of 10 min. d_c = relative voltage change between two steady states and d_{max} = maximum single voltage change, are measured over the reference impedance. Long-term flicker values were measured during 120 minutes.

The test set-up photo is included in appendix IV.

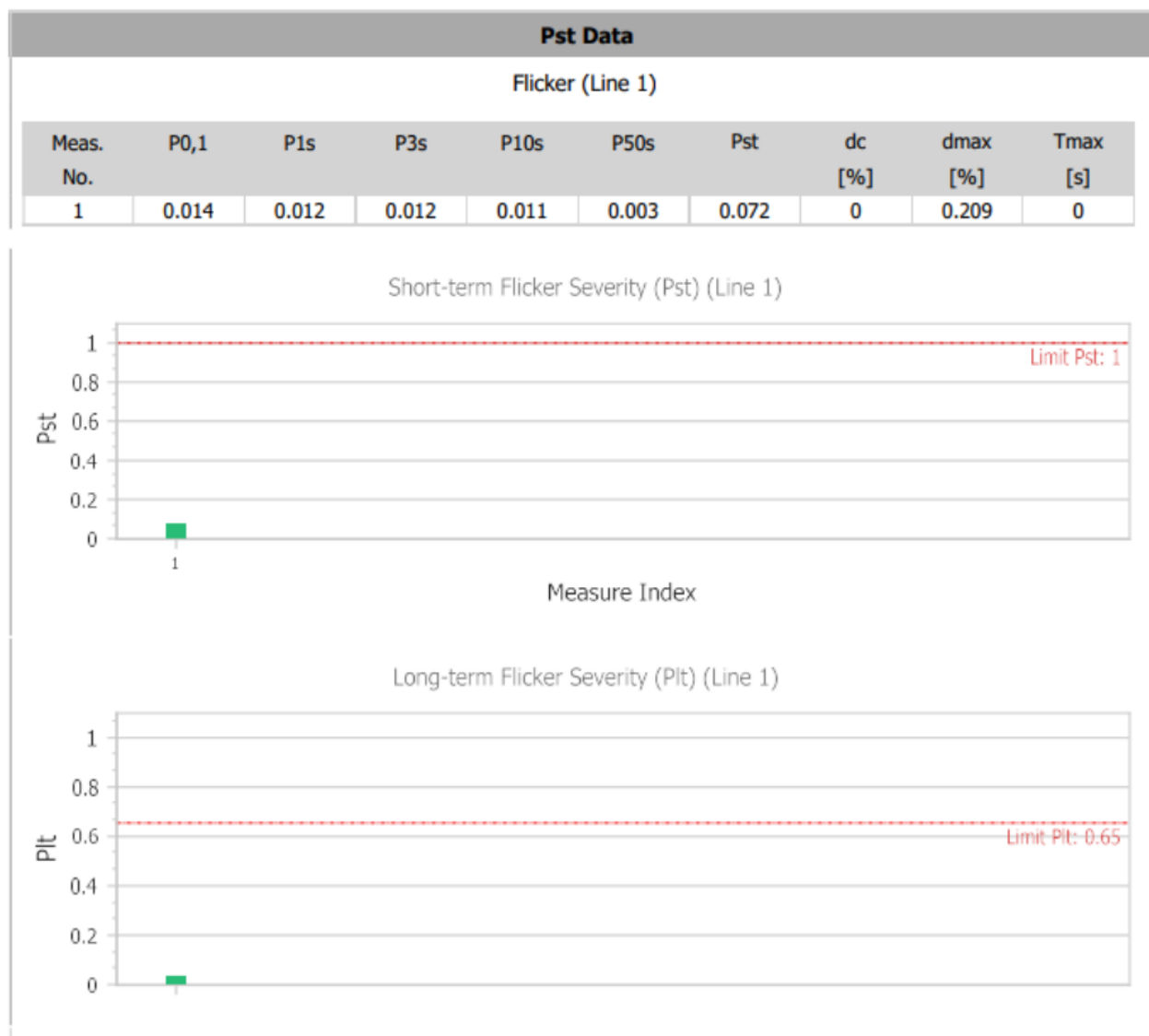
6.5.2 Test result

Date of Test	August 12, 2024	Temperature	(24.4 ~ 24.6) °C
Test Mode	Mode #1	Relative humidity	(50.6 ~ 50.9) % R.H.
Test Result	Pass	Tested By	Jung, Ji-won 정지원

6.5.3 Test data

Flicker Measurements					
	P_{st}	Max P_{st}	Max d_c	Max d_{max}	Max T_{max}
Line 1:	0.031	0.072	0	0.209	0
Limits:	0.65	1	3.3	4	0.5
Results:	PASS	PASS	PASS	PASS	PASS

Flicker Individual Measurements												
Measurement	P_{st} []			d_c [%]			d_{max} [%]			T_{max} [s]		
	Value	Limit	Result	Value	Limit	Result	Value	Limit	Result	Value	Limit	Result
#1	0.07	1.00	PASS	0.00	3.30	PASS	0.21	4.00	PASS	0.00	0.50	PASS



7. IMMUNITY TESTS

7.1 Electrostatic Discharges (ESD)

7.1.1 Test specification

Discharge Voltage	Air Discharge: 8 kV (Direct) Contact Discharge: 4 kV (Direct, Indirect)
Polarity	Positive / Negative
Number of Discharge	Air Discharge: 10 at all test point Contact Discharge: 25 at all test point
EUT-position	Table top

7.1.2 Test setup

The EUT and all local support equipment were placed on non-metallic support 0.8 m above a reference ground plane (RGP) and the minimum distance between the EUT and any laboratory walls or any other metallic surfaces shall be at least 1 meter and were put into operation according to the specified operating mode.

Air discharges were applied to non-metallic parts of the EUT and Contact discharges were applied to all accessible metallic parts. Discharges were also applied to the Horizontal and Vertical Coupling Plane, where applicable.

The test set-up photos are included in appendix V.

7.1.3 Test result

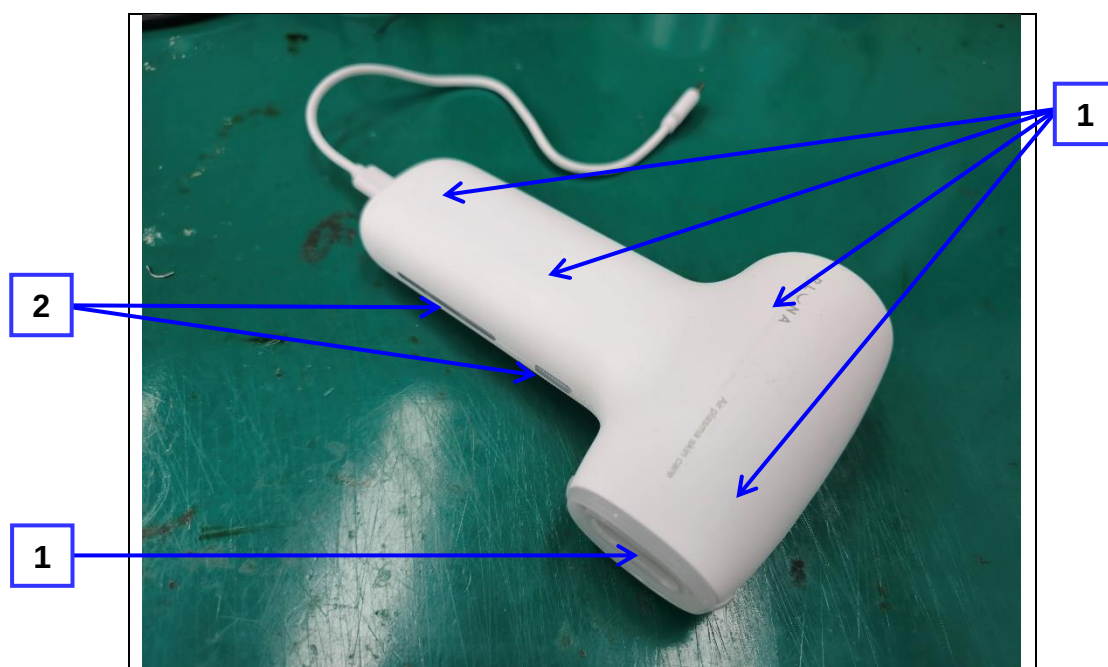
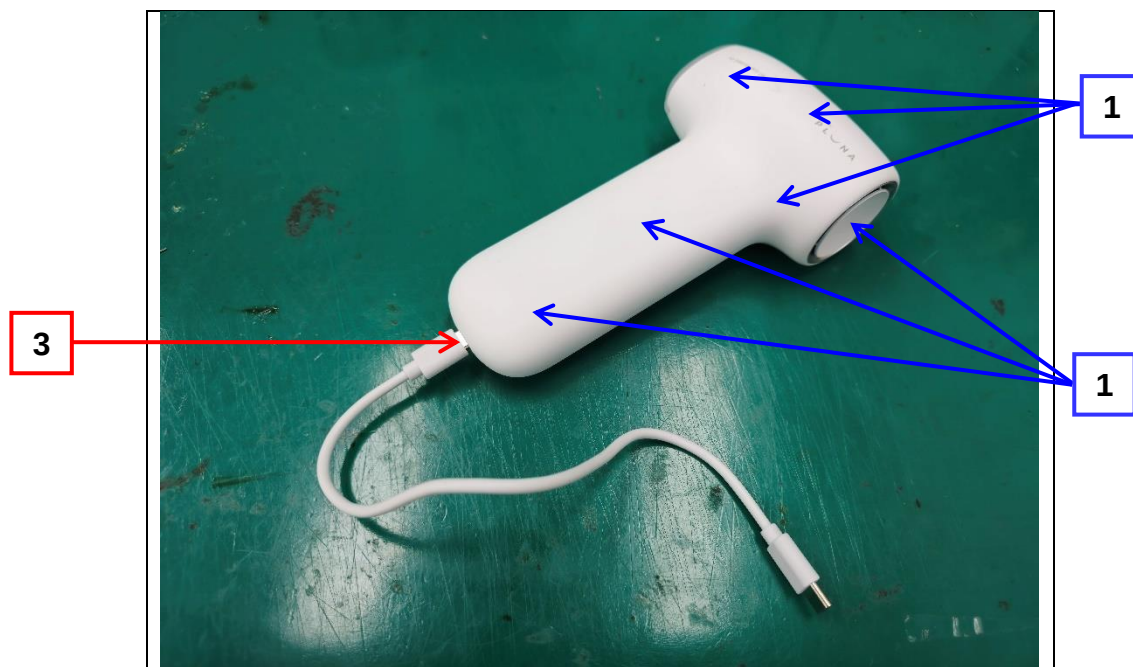
Date of Test	August 12, 2024	Temperature	(20.5 ~ 20.7) °C
Test Location	Shield Room	Relative humidity	(52.8 ~ 52.9) % R.H.
Test Mode	Mode #1, Mode #2	Atmospheric pressure	98.7 kPa
Required Criteria	B	Test Result	PASS
Tested By	Jung, Ji-won 정지원		

Test Data				
Discharge Level (± kV)	ESD Points	Performance Criterion	Result	Description
8 (Air)	(1) Enclosure (Non-metal part)	B	A	There was no deviation from normal operating condition.
	(2) Button, LED	B	A	
4 (Contact)	(3) USB port	B	A	
4 (Indirect)	HCP/VCP	B	A	There was no deviation from normal operating condition.

Note. The test points of the EUT are each location on the surface touchable by hand (see test point in next page)

7.1.4 Test Points

Air-Direct	
Contact-Direct	



7.2 Continuous RF Electromagnetic Field Disturbances

7.2.1 Test specification

Frequency range & Test Level	(80 ~ 1 000) MHz, 3 V/m
Modulation	AM 80 %, 1 kHz
Frequency step	1 %
Dwell time at each frequency	1 s
Exposed side	Front/Back/Left/Right
Polarization of antenna	Horizontal / Vertical
EUT-position	Table top
Distance of antenna – EUT	3 m

7.2.2 Test setup

The EUT and all local support equipment were placed on a non-metallic support 0.8 m above a reference ground plane (RGP) in a fully anechoic chamber and were put into operation according to the specified operating mode.

The test set-up photo is included in appendix VI.

7.2.3 Test result

Date of Test	August 13, 2024	Temperature	(22.5 ~23.4) °C
Test Location	Anechoic Chamber	Relative humidity	(55.3 ~ 55.9) % R.H.
Test Mode	Mode #1, Mode #2	Atmospheric pressure	98.4 kPa
Required Criteria	A	Test Result	PASS
Tested By	Jung, Ji-won 정지원		

+

Test Data					
Freq. Range [MHz]	Pol. V/H	Exposed side	Performance Criterion	Result	Description
80 ~ 1 000	V/H	Front	A	A	There was no deviation from normal operating condition.
	V/H	Back	A	A	
	V/H	Left	A	A	
	V/H	Right	A	A	

7.3 Electrical Fast Transients/Burst (EFT/B)

7.3.1 Test specification

Test level	1 kV (AC mains), 0.5 kV (Analogue/Digital data, DC network power)
Burst frequency	5 kHz
Polarity	Positive / Negative
Coupling time	120 s
Coupling methods	AC mains / DC network – Coupling Decoupling Network (CDN) Analogue/Digital data – Capacitive Coupling Clamp (CCC)
Lines for test	AC mains
EUT-position	Table top

7.3.2 Test setup

The EUT and all cables to the EUT were placed on non-metallic support 0.1 m above a reference ground plane (RGP) and were put into operation according to the specified operating mode.

The minimum distance between the EUT and all other conductive structures (e.g. the walls of a shielded room), except the ground reference plane shall be more than 0.5 m. Unless otherwise specified in the product standard or the product family standard, the length of the signal and power lines between the coupling device and the EUT shall be $0.5\text{ m} \pm 0.05\text{ m}$. If the manufacturer provides a non-detachable supply cable more than $0.5\text{ m} \pm 0.05\text{ m}$ long with the equipment, the excess length of this cable shall be folded to avoid a flat coil and situated at a distance of 0.1 m above the ground reference plane.

The test set-up photo is included in appendix VII.

7.3.3 Test Data

Date of Test	August 12, 2024	Temperature	(20.8 ~ 20.9) °C
Test Location	Shield Room	Relative humidity	(52.9 ~ 53.0) % R.H.
Test Mode	Mode #1	Atmospheric pressure	98.7 kPa
Required Criteria	B	Test Result	PASS
Tested By	Jung, Ji-won 정지원		

Test Data					
Line for test		Coupling Method	Test level [± kV]	Result	Description
AC mains	L + N	CDN	1	A	There was no deviation from normal operating condition.

7.4 Surges

7.4.1 Test specification

Test level	1 kV (Line-to-Line) / 2 kV (Line-to-Ground)
Number of surges	5 surges / polarity
Polarity	Positive / Negative
Angle	EN 55014-2: 90°, 270°
Repetition rate	30 s
Coupling methods	AC mains – Coupling Decoupling Network (CDN)
Lines for test	AC mains
EUT-position	Table top

7.4.2 Test setup

The EUT and all local support equipment were placed on a non-metallic support 0.8 m above a reference ground plane (RGP) and were put into operation according to the specified operating mode.

The test set-up photos are included in appendix VIII.

7.4.3 Test result

Date of Test	August 12, 2024	Temperature	(21.0 ~ 21.3) °C
Test Location	Shield Room	Relative humidity	(53.1 ~ 53.3) % R.H.
Test Mode	Mode #1	Atmospheric pressure	98.7 kPa
Required Criteria	B	Test Result	PASS
Tested By	Jung, Ji-won 정지원		

Test Data					
Line for test		Coupling Method	Test level [± kV]	Result	Description
AC mains	L + N	CDN	1	A	There was no deviation from normal operating condition.

7.5 Injected Currents

7.5.1 Test specification

Frequency range & Test level	0.15 MHz ~ 80 MHz, 3 V
Modulation	AM 80 %, 1 kHz
Frequency step	1 %
Dwell time at each frequency	1 s
Coupling methods	AC mains / DC network – CDN Analogue/Digital data – EM clamp
Lines for test	AC mains
EUT-position	Table top

7.5.2 Test setup

The EUT and all local support equipment were placed on a non-metallic support 0.1 m above a reference ground plane (RGP) and were put into operation according to the specified operating mode.

The test set-up photo is included in appendix IX.

7.5.3 Test result

Date of Test	August 12, 2024	Temperature	(21.6 ~ 21.8) °C
Test Location	Shield Room	Relative humidity	(53.6 ~ 53.9) % R.H.
Test Mode	Mode #1	Atmospheric pressure	98.7 kPa
Required Criteria	A	Test Result	PASS
Tested By	Jung, Ji-won 정지원		

Test Data			
Line for Test	Coupling Method	Result	Description
AC mains	CDN (M2)	A	There was no deviation from normal operating condition

7.6 Voltage Dips

7.6.1 Test specification

Nominal Mains Voltage (U_T)	230 V~, 50 Hz
Level of Reduction (dip)	0.5 cycles at 100 % of U_T 10 / 12 cycles at 60 % of U_T 25 / 30 cycles at 30 % of U_T
No. of dips/interruption	3
Interval	10 s
Lines for test	AC mains
Type of line	AC Input line - Unshielded
EUT-position	Table top

7.6.2 Test setup

The EUT and all local support equipment were placed on a non-metallic support 0.8 m above a reference ground plane (RGP) and were put into operation according to the specified operating mode.

The test set-up photos are included in appendix X.

7.6.3 Test result

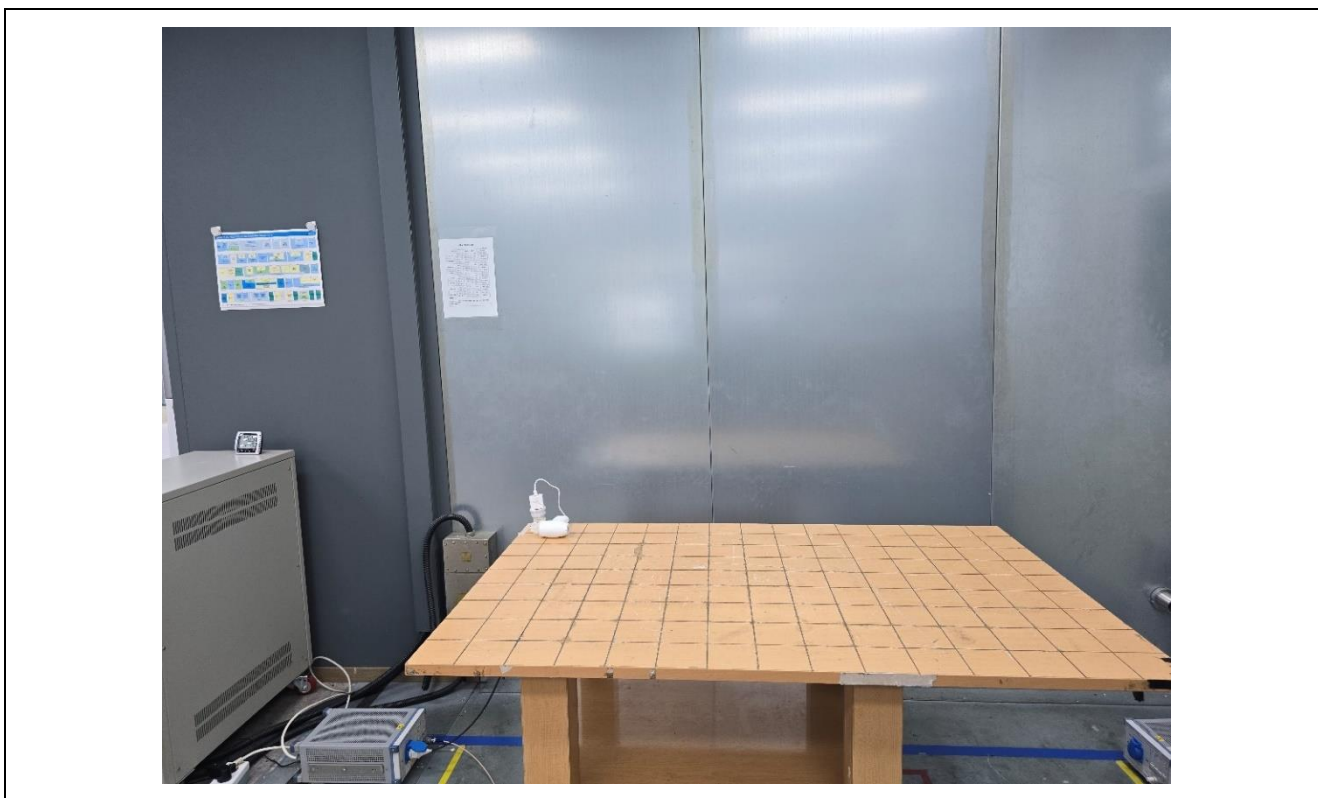
Date of Test	August 12, 2024	Temperature	(21.4 ~ 21.5) °C
Test Location	Shield Room	Relative humidity	(53.4 ~ 53.5) % R.H.
Test Mode	Mode #1	Atmospheric pressure	98.7 kPa
Required Criteria	C	Test Result	PASS
Tested By	Jung, Ji-won 정지원		

Test Data					
Test	Test Level (in % U_T)	Cycles	Performance Criterion	Result	Description
Voltage dips	0 %	0.5	C	A	There was no deviation from normal operating condition.
	40 %	10	C	A	
	70 %	25	C	A	

Appendix I. Test Setup Photo: Conducted Emissions from AC mains power ports

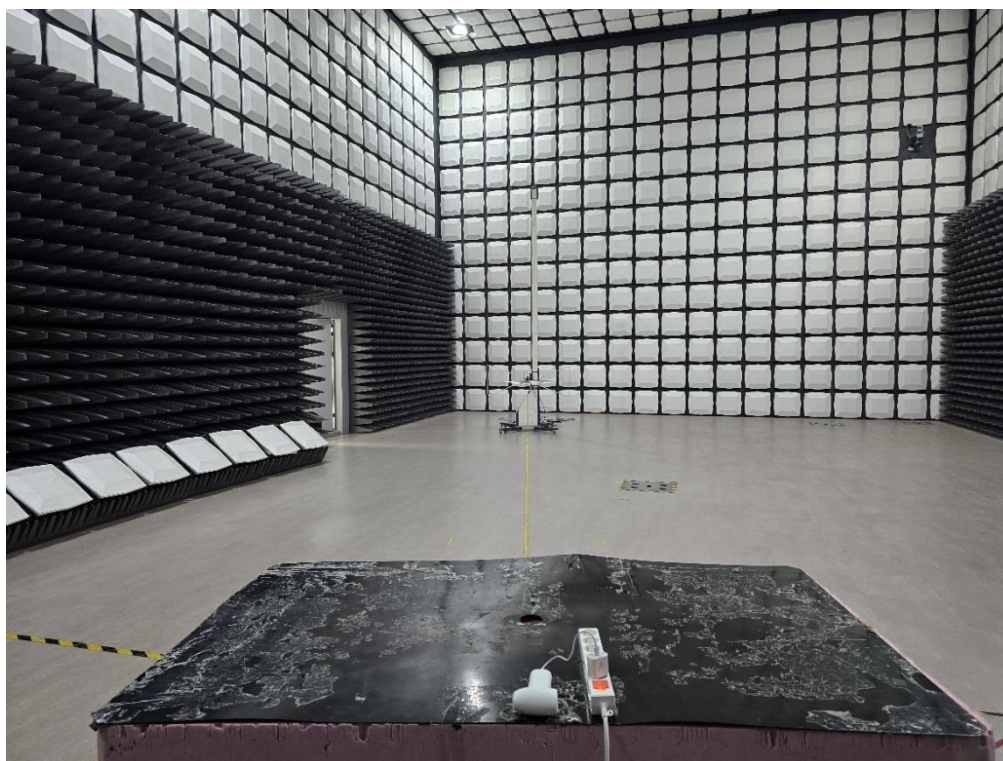
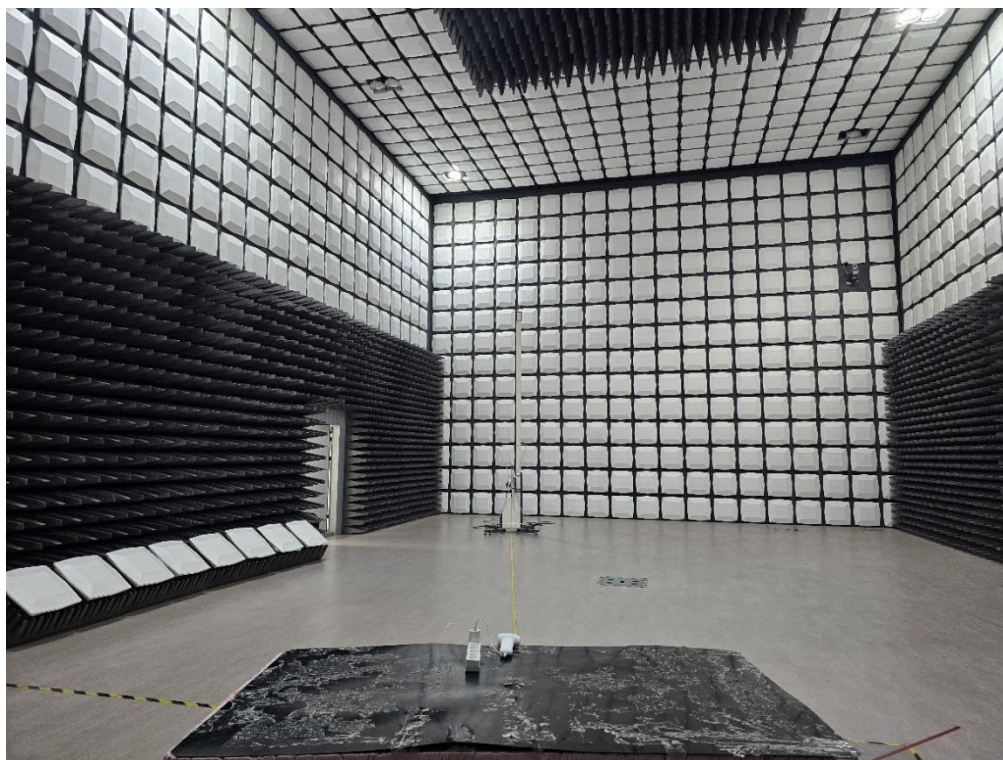


Appendix II. Test Setup Photo: Discontinuous Disturbance Voltage

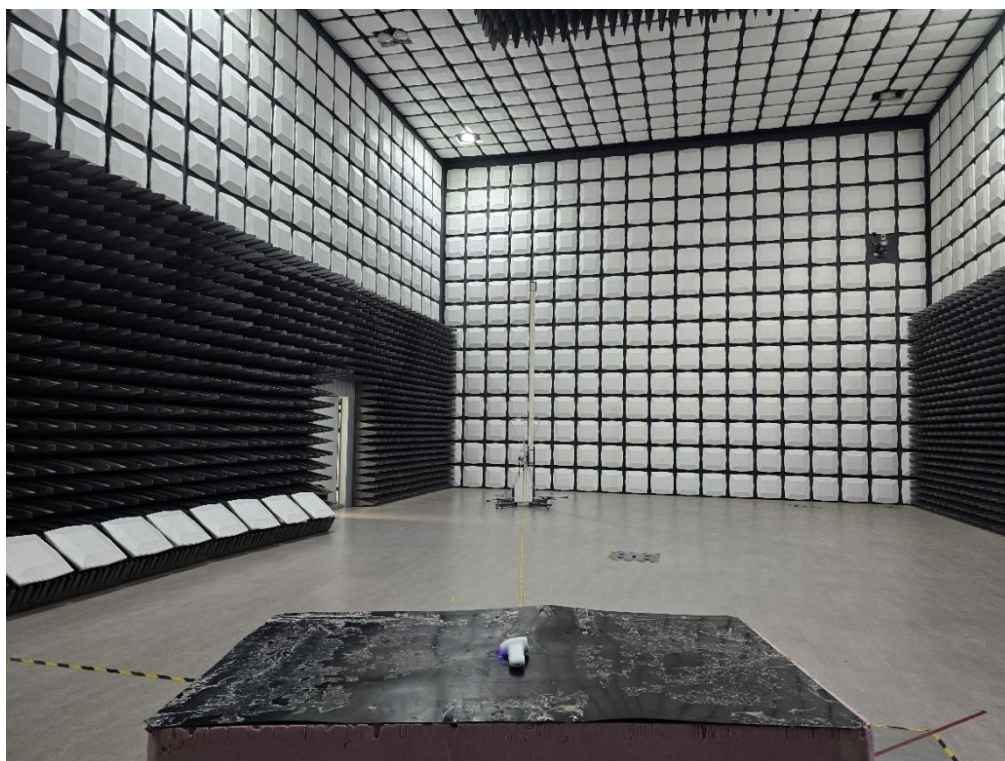
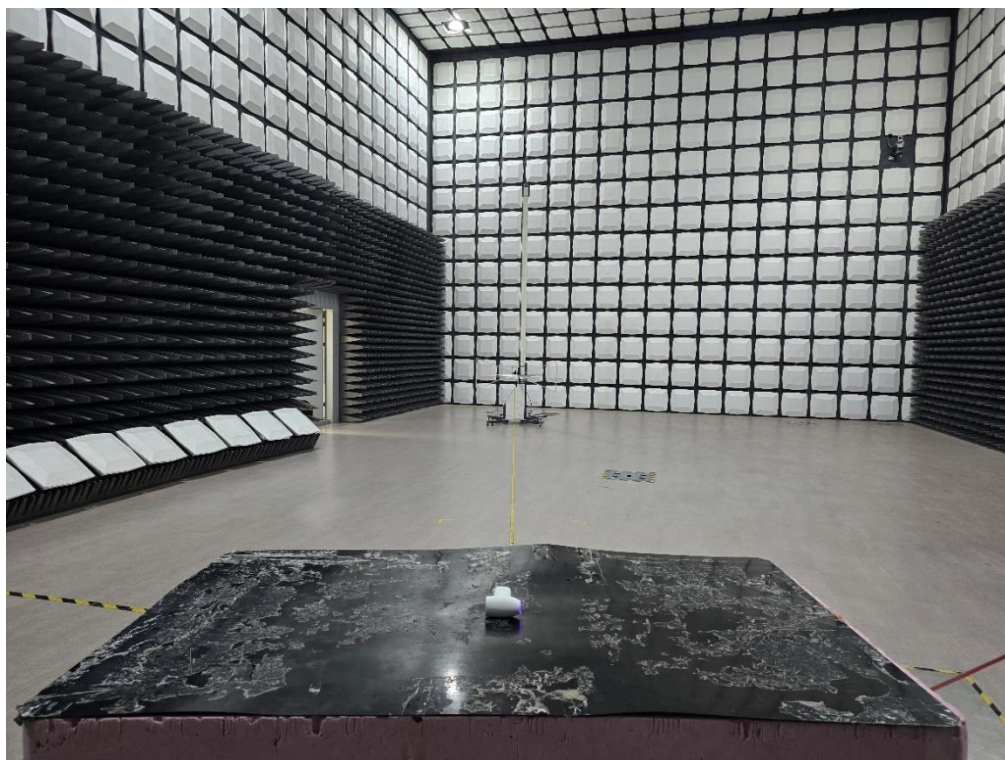


Appendix III. Test Setup Photo: Radiated Emissions

Mode #1



Mode #2

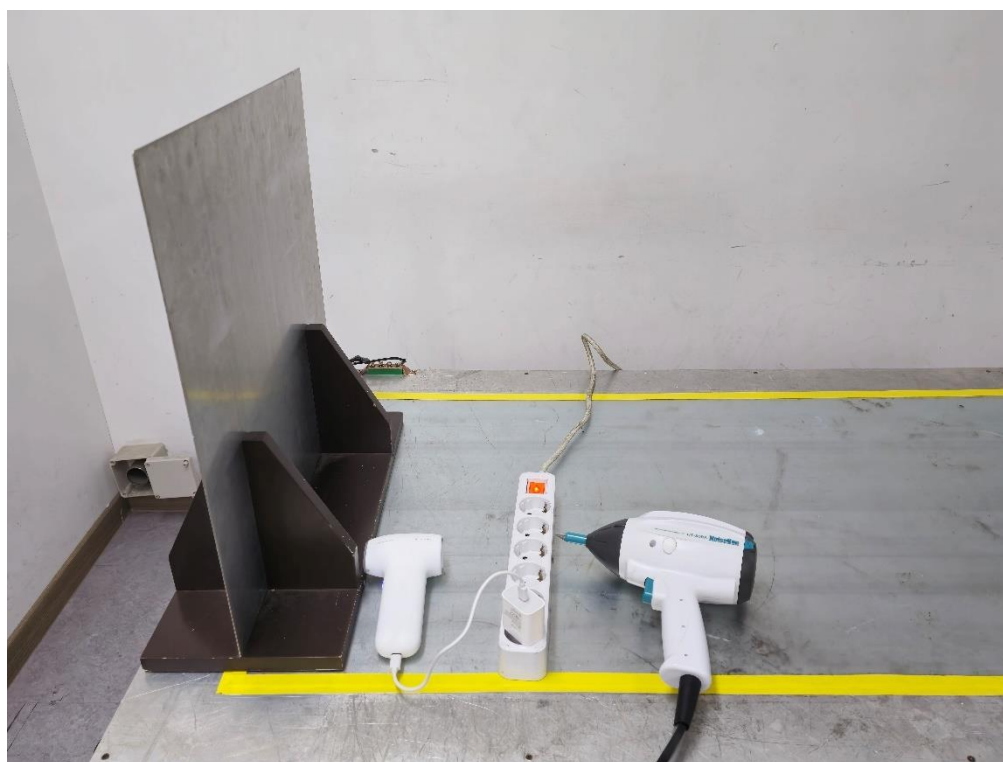


Appendix IV. Test Setup Photo: Harmonic Current Emissions & Voltage Changes, Voltage Fluctuations and Flicker

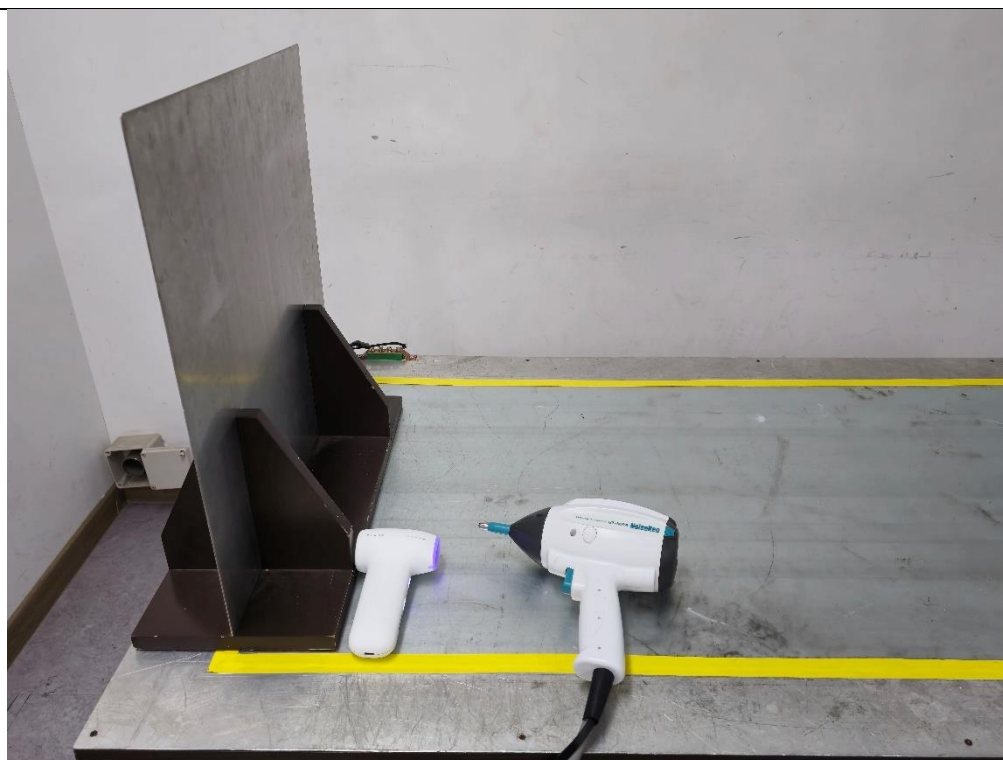


Appendix V. Test Setup Photo: Electrostatic Discharges (ESD)

Mode #1

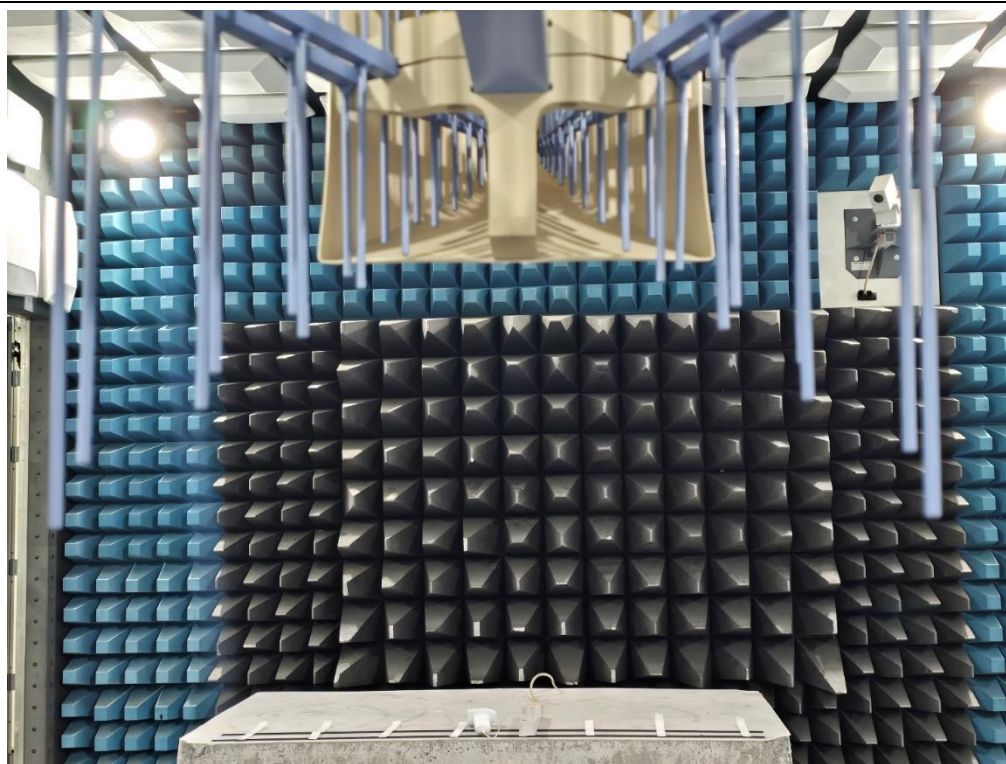


Mode #2



Appendix VI. Test Setup Photo: Continuous RF Electromagnetic Field Disturbances

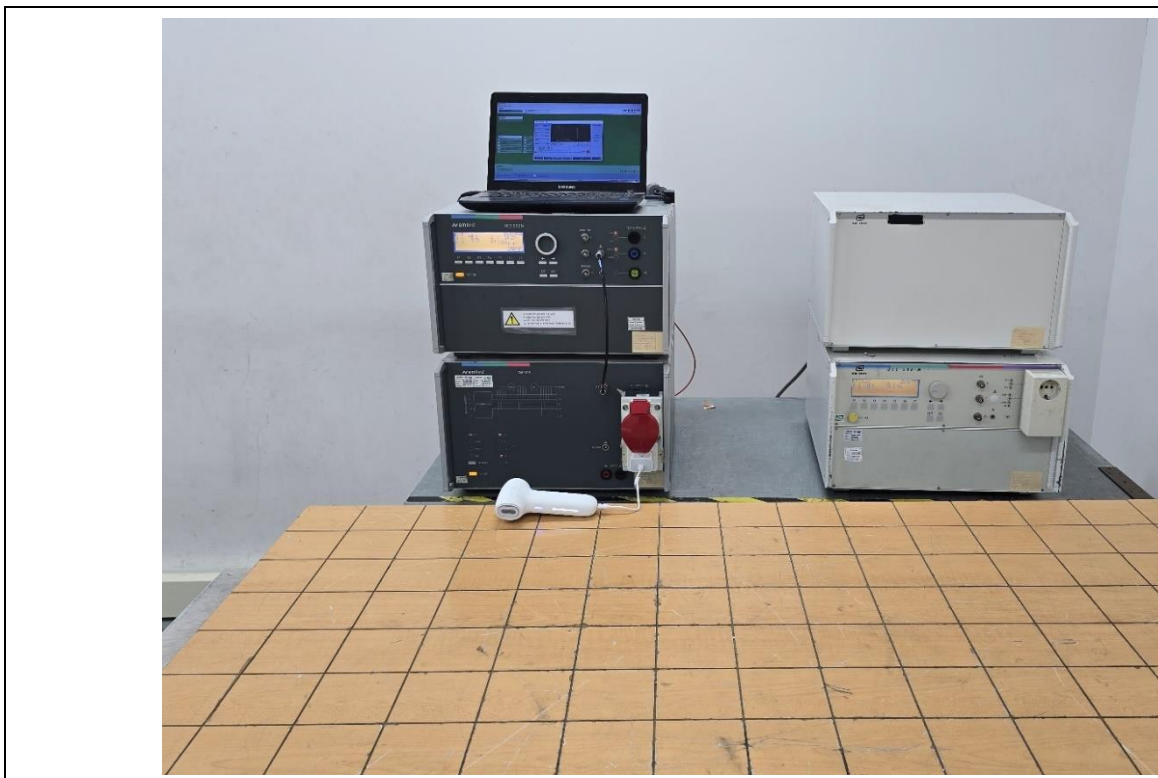
Mode #1



Mode #2



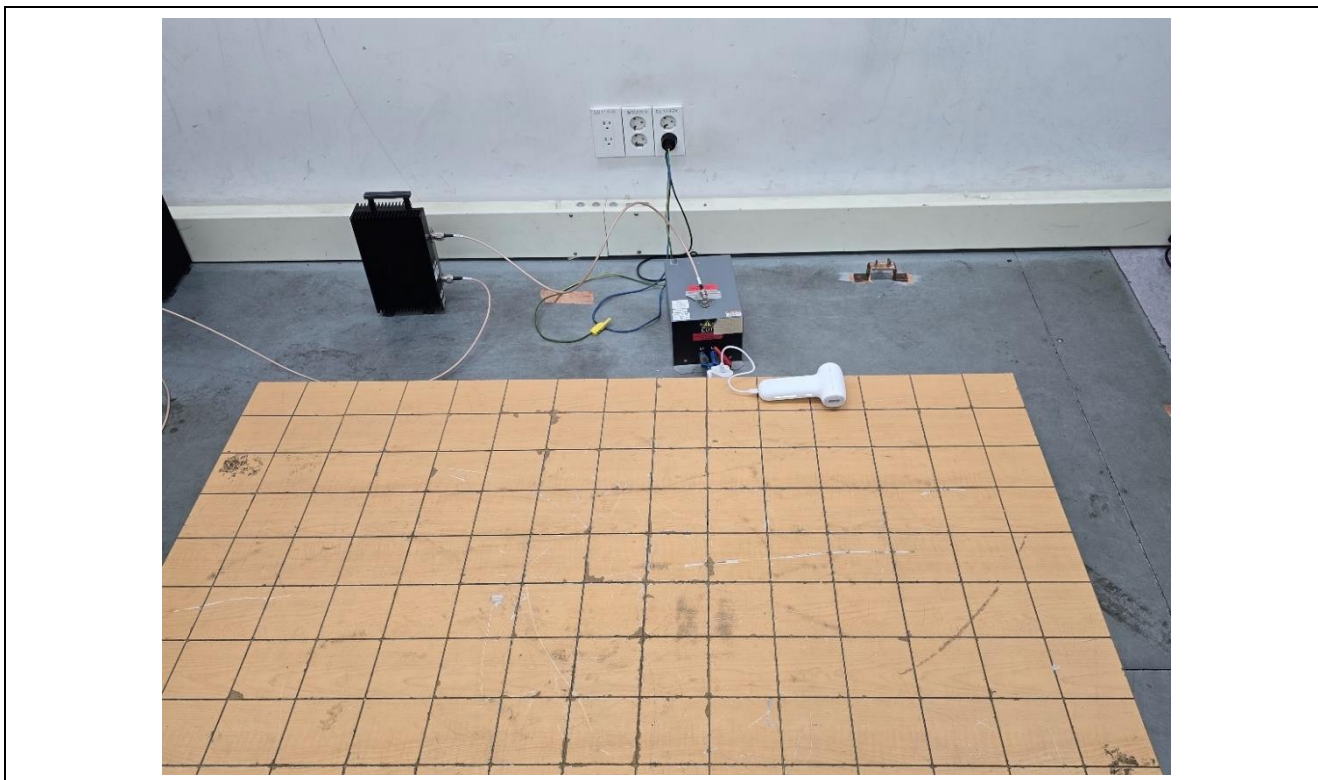
Appendix VII. Test Setup Photo: Electrical Fast Transients/Burst (EFT/B)



Appendix VIII. Test Setup Photo: Surges



Appendix IX. Test Setup Photo: Injected Currents



Appendix X. Test Setup Photo: Voltage Dips



Appendix XI. Test Instrumentation

Name of Equipment	Model Number	Manufacturer	Serial Number	Last Cal. (Interval)	Use
For EMISSION					
Test Receiver	ESR7	Rohde & Schwarz	101543	2024-06-27 (1Y)	☒
EMI Test Receiver	ESW	Rohde & Schwarz	101197	2024-01-11 (1Y)	☐
Click Meter	DDA55+	AFJ	14042408249	2024-07-16 (1Y)	☒
LISN	ENV4200	Rohde & Schwarz	100203	2024-01-12 (1Y)	☐
LISN	ENV216	Rohde & Schwarz	102572	2024-06-27 (1Y)	☒
LISN	ENV216	Rohde & Schwarz	100110	2024-01-12 (1Y)	☒
Voltage Probe	TK9420	Schwarzbeck	9420-165	2024-01-12 (1Y)	☐
Loop Antenna	HFH2-Z2	Rohde & Schwarz	100341	2023-05-17 (2Y)	☐
8-Wire ISN CAT 3	CAT3 8158	Schwarzbeck	CAT3 8158 #70	2024-01-14 (1Y)	☐
8-Wire ISN CAT 5	CAT5 8158	Schwarzbeck	CAT5 8158 #126	2024-01-14 (1Y)	☐
8-Wire ISN CAT 6	NTFM 8158	Schwarzbeck	NTFM 8158 #95	2024-01-14 (1Y)	☐
Test Receiver	ESU	Rohde & Schwarz	100303	2024-01-11 (1Y)	☒
TRILog Broadband Antenna	VULB9163	Schwarzbeck	9163-799	2023-10-04 (2Y)	☒
DOPPEL STEG HORN Antenna	HF 907	Rohde & Schwarz	102426	2023-10-23 (2Y)	☐
Preamp (1-18) GHz	SCU 18D	Rohde & Schwarz	19006450	2024-04-12 (1Y)	☐
Preamp 9 kHz-1 GHz	310N	Sonoma Instrument	344015	2024-01-12 (1Y)	☒
Attenuators	6 dB	Rohde & Schwarz	272.4110.50	2024-01-11 (1Y)	☒
Antenna Master	MA4000-EP	INNCO SYSTEM	4600814	N/A	☒
Antenna Master	MA4000-XP-ET	INNCO SYSTEM	N/A	N/A	☐
Turn Table	DT3000-3t	INNCO SYSTEM	1310814	N/A	☒
CO3000 Controller	CO3000-4PORT	INNCO SYSTEM	CO3000/806/3413 0814/L	N/A	☒
CO3000 Controller	CO3000-4PORT	INNCO SYSTEM	CO3000/807/3413 0814/L	N/A	☐
Common Mode Absorbing Device	CMAD1614	Schwarzbeck	00191	2024-01-14 (1Y)	☒
Notch Filter	G318	MICRO-TRONICS	BRM50702	2023-10-28 (1Y)	☐
Notch Filter	G319	MICRO-TRONICS	BRC50703	2023-10-28 (1Y)	☐
Digital Power Analyzer For Harmonic & Flicker	DPA 500	EM Test	V0713102356	2023-11-27 (1Y)	☒
AC Power Source	ACS 500	EM Test	V0713102357	2024-06-28 (1Y)	☒
For IMMUNITY					
ESD Simulator	ESS-2000	NoiseKen	ESS04Z3791	2024-04-13 (1Y)	☒
ESD Gun	GT-30RA	NoiseKen	ESS2133272	2024-04-13 (1Y)	☒
Signal Generator	SMA100A	Rohde & Schwarz	101047	2024-01-12 (1Y)	☒
High Gain Log-Periodic Antenna	HL046E	Rohde & Schwarz	100014	2024-03-08 (1Y)	☒

DOPPEL STEG HORN Antenna	HF906	Rohde & Schwarz	100332	2024-02-04 (2Y)	☐
Amplifier	SSA502A	Sungsan	SSEC0001	2023-08-23 (1Y)	☒
Power Amplifier	250W1000A	Amplifier Research	0320414	2023-12-24 (1Y)	☒
Amplifier	SSA503A	Sungsan	SSEC0002	2023-11-01 (1Y)	☐
Amplifier	SSA505A	Sungsan	SSEC0003	2023-11-01 (1Y)	☐
Power meter	NRP2	Rohde & Schwarz	103736	2024-06-27 (1Y)	☒
Power Sensor	NRP-Z11	Rohde & Schwarz	100101	2024-01-12 (1Y)	☒
Power Sensor	NRP-Z51	Rohde & Schwarz	102735	2024-01-12 (1Y)	☒
Directional Coupler	DC6180A	Amplifier Research	0335536	2024-01-12 (1Y)	☒
Directional Coupler	DC7144A	Amplifier Research	0320556	2024-01-12 (1Y)	☐
Directional Coupler	SSA505	Sungsan	2801(A)	2023-11-24 (1Y)	☐
Ultra Compact Simulator	UCS 500 N7	EM Test	V1047108018	2023-12-28 (1Y)	☒
Combined Coupling Decoupling Net.	CNI 503 B7	EM Test	V1047108019	2023-12-28 (1Y)	☒
Capacitive Coupling Clamp	HFK	EM Test	0306-45	2024-06-27 (1Y)	☐
SIGNAL GENERATOR	SMT03	Rohde & Schwarz	SG00000005	2024-01-12 (1Y)	☒
Power Sensor	NRP6A	Rohde & Schwarz	1424.6796K02-102093-BY	2023-12-24 (1Y)	☒
AMPLIFIER	150A250	Amplifier Research	313455	2023-09-20 (1Y)	☒
Directional Coupler	DC2600M2	Amplifier Research	320494	2023-11-24 (1Y)	☒
Attenuator	150-A-FFN-06	Bird Technologies Group	0605	2024-01-12 (1Y)	☒
CDN	FCC-801-M1-16A	Fisher Custom	06006	2024-01-12 (1Y)	☐
CDN	FCC-801-M2-16A	Fisher Custom	06004	2024-01-12 (1Y)	☒
CDN	FCC-801-M3-16A	Fisher Custom	06006	2024-06-27 (1Y)	☐
CDN	FCC-801-M5-16A	Fisher Custom	03006	2024-01-12 (1Y)	☐
EM Injection Clamp	F-203I-23MM	Fisher Custom	490	2024-01-14 (1Y)	☐
Termination	300-T-MN	Bird Technologies Group	0526	2023-12-24 (1Y)	☒
Bulk Current Injection Probe	F-140	Fischer Custom	110006	2024-01-11 (1Y)	☐
Magnetic Field Antenna	MS 100N	EM Test	0512-11	2024-03-29 (1Y)	☐
Current Transformer	MC 2630	EM Test	0912-66	2024-03-29 (1Y)	☐
Ultra Compact Generator	UCS 500 M6B	EM Test AG	V0626101562	2024-01-12 (1Y)	☒
Motorized Variac	MV 2616	EM Test AG	V0626101563	2024-01-12 (1Y)	☒
AC/DC Power Source	3150AFX-4L	Pacific	110634101	2024-06-28 (1Y)	☐
CONTINUOUS WAVE SIMULATOR	CWS 500N4	EM TEST	V1131110351	2023-07-25 (2Y)	☐
Coupling Network	CN 16-L2/L4	EM TEST	0811-56	N/A	☐